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| 10/647,628 | 08/25/2003 | Steven E. Riedl | 61575.1026 | 2545 |

Alex L. Yip
Kaye Scholer LLP
425 Park Avenue
New York, NY 10022

7590

11/08/2007

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| EXAMINER |
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LERNER, MARTIN

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| ART UNIT | PAPER NUMBER |
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2626

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11/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/647,628

Applicant(s)

RIEDL, STEVEN E.

Examiner

Martin Lerner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 71 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 to 5, 8 to 26, 28 to 40 and 43 to 71 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 27, 41, and 42 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because of the following informalities:

In Figure 4, Step 104, "Demulitplex" should be "Demultiplex".

In Figure 5, before Step 202, "(Fig. 2)" should be "(Fig. 4)".

In Figure 5, after Step 214, "(Fig. 2)" should be "(Fig. 4)".

In Figure 9, reference numerals 270 to 278 do not match reference numerals 400 to 408 from the Specification, Page 25, Line 7 to Page 26, Line 2.

In Figure 11, Steps 508, 510, and 512 repeat identical reference numerals from Figure 10. Steps 508, 510, and 512 should be relabeled with unique reference numerals for clarity, and the Specification should be updated, as appropriate.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office Action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

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renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, Applicant will be notified and informed of any required corrective action in the next Office Action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

On page 5, line 17, "broadcast" should be "broadcasts".

On page 13, line 20, "of Fig. 7" should be "of Fig. 6".

On page 15, line 13, "cares" should be "care".

On page 17, line 16, "IRT 78a" should be "IRT 80". (Figure 3)

On page 17, line 16, "staging processor 80b" should be "staging processor 82".

(Figure 3)

On page 17, line 17, "staging processor 80b" should be "staging processor 82".

(Figure 3)

On page 19, line 6, server 73 is not illustrated in Figure 2.

On page 28, line 21, "PC or" should be "PCM".

On page 29, line 10, "method 600" should be "method 500", if it is to match

Figure 11.

Appropriate correction is required.

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3. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

On page 6, line 16, the hyperlink should be deleted.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 to 3, 8 to 11, 13 to 14, 21 to 24, 32 to 38, 43, 45 to 46, 52 to 54, 57 to 62, 65 to 66, and 68 to 70 are rejected under 35 U.S.C. 102(e) as being anticipated by *Vinton et al.*

Regarding independent claims 1, 32, 33, 35, 53, 59, 60, and 68, *Vinton et al.* discloses a method and system for controlling and encoding a loudness of an audio program, comprising:

“memory to store the program asset” – a general-purpose computer system or digital signal processor computer system has an audio memory (RAM) used by DSP 72 for signal processing and ROM 74 for storing programs needed to implement the invention (¶[0138]: Figure 6);

“a processor coupled to the memory, the processor being programmed to:” – a general-purpose computer system or digital signal processor computer system has a DSP 72 for signal processing to implement the invention (¶¶0138]: Figure 6);

“retrieving a stored program asset, the asset having audio encoded at a first loudness setting” – transmitter 2 receives an audio signal from path 1, and decoder 4 performs processing that decodes the encoded audio information (¶¶0029] and ¶¶0031]: Figure 1); Table 1 includes information for the relative loudness of speech in three programs that may be broadcast (¶¶0033] - ¶¶0034]: Figure 1); implicitly, then, received audio is “encoded at a first loudness setting”;

“identifying dialog of the audio of the asset” – a classifier 12 examines the audio information and classifies segments of the audio information as being “speech segments” that represent portions of the audio signal that are classified as speech, or as being “non-speech segments” that represent portions of the audio signal that are not classified as speech (¶¶0043]: Figure 2); speech segments are equivalent to “dialog”, as opposed to segments that are music or other sounds;

“determining a loudness of the dialog” – each portion of the audio signal that is represented by a segment of audio information has a respective loudness; loudness estimator 14 examines the speech segments and obtains an estimate of this loudness for the speech segments (¶¶0044]: Figure 2);

“comparing the determined loudness to the first loudness setting” – controller 16 uses the estimated loudness to make any needed adjustments to the loudness of the speech segments (¶¶0046]: Figure 2); loudness is automatically controlled so that

variations in the loudness of speech is reduced automatically ([0035]); an average of the estimated loudness may be obtained for a specified interval such as ten minutes; an average loudness of speech for the entire motion picture is estimated to be -25 dB ([0039]);

“re-encoding the asset at a second loudness setting corresponding to the second loudness, if the first loudness setting and the determined loudness are different by more than a predetermined amount” – in the transmitter, the modified audio information can be encoded or otherwise prepared for transmission; controller 16 modifies the audio information as necessary to reduce variations in the loudness of the portions of the audio signal represented by speech segments ([0045]: Figure 2); the loudness of the audio material can be adjusted so that the speech loudness is within a specified interval; for example, if the specified interval of speech loudness is from -24 dB to -30 dB, the levels of the audio material shown in Table III can be adjusted to the levels shown in Table IV ([0038]: Tables III and IV); in a preferred embodiment, the controller 16 receives an indication of loudness or signal energy for all segments and makes adjustments in loudness only within segments having a loudness or an energy level below some threshold ([0047]: Figure 2); thus, if speech is outside the specified interval of -24 dB to -30 dB, e.g. shouting of -20 dB or whispers of -37 dB, then this corresponds to being “different by more than a predetermined amount” of a desired level of -24 dB to -30 dB.

Regarding claims 2 and 36, *Vinton et al.* discloses that an AC-3 audio coding standard conveys metadata along with encoded audio data including control information

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known as “dialnorm”, which allows a receiver to automatically adjust the volume control setting to achieve a desired level of speech loudness for each program or channel, despite differences that would otherwise exist between different programs or channels (¶[0006]); specifically, the apparatus can be incorporated into an audio encoder to provide dialnorm information for assembly into an AC-3 compliant data stream (¶[0049]); implicitly, dialnorm provides a loudness of dialog.

Regarding claims 3, 8, 38, 43, 54, and 69, *Vinton et al.* discloses dividing three programs of Newscast 1, Newscast 2, and Commercial into time intervals representing Voice 1, Voice 2, Other Sounds, Voice, and Music, and finds a loudness of each time interval as -24 dB, -27 dB, -33 dB, etc. (¶[0034]: Table I); implicitly, there are time intervals with intermediate loudness; thus, normal speech of Scene 1 has an loudness of -27 dB, which is intermediate between a ship whistle of -12 dB and waves of -40 dB (Table III).

Regarding claims 9, 10, and 61, *Vinton et al.* discloses computing an average of the estimated loudness for a specified time interval (¶[0039]: Table III); implicitly, an average of all the time intervals includes time intervals having intermediate loudness, such as normal speech with a loudness of -27 dB, so that the average is “a function of the loudnesses of the time intervals having intermediate loudness”.

Regarding claims 11, 37, 58, and 66, *Vinton et al.* discloses the apparatus can be incorporated into an audio encoder to provide dialnorm information for assembly into an AC-3 compliant data stream (¶[0049]); implicitly, dialnorm provides a loudness of all time intervals including time intervals having intermediate loudnesses.

Regarding claims 13, 23, 34, 45, 62, and 70, *Vinton et al.* discloses that the audio information may be passed along for transmission or storage (¶¶0049): Figure 3); implicitly, stored audio information may be subsequently retrieved.

Regarding claims 14 and 46, *Vinton et al.* discloses decoder 4 decodes the encoded audio information into a form that can be used to generate an audio signal compliant with AC-3 or MPEG (¶¶0031)); implicitly, decoding a transmitted audio signal from AC-3 or MPEG involves demultiplexing.

Regarding claim 21, *Vinton et al.* discloses performing the process of the modifying and encoding the modified audio information for a plurality of segments; thus, loudnesses of normal speech, whispers, and shouting of -27 dB, -37 dB, and -20 dB, are determined, compared, and re-encoded (¶¶0036): Table III).

Regarding claim 22, *Vinton et al.* discloses embodiments where the broadcast is a Newscast ("a program") or a Commercial ("an advertisement") (¶¶0034): Table I).

Regarding claims 24, 52, 57, and 65, *Vinton et al.* discloses that audio information is processed by a step that includes an average squared l_2 norm of a block to obtain features (¶¶0056] -¶¶0061)); thus, audio information is normalized before it is compared.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 15, 16, 25, 26, 28, 47, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Vinton et al.* in view of *Hemkumar et al.*

Concerning independent claim 25, *Vinton et al.* discloses all the limitations of retrieving, demultiplexing, identifying, determining, comparing, and re-encoding, as provided by independent claim 1, including demultiplexing, implicitly, and incorporating into an audio encoder to provide dialnorm information. (¶[0049]). Specifically, it is maintained that there is sufficient disclosure to one having ordinary skill in the art that received audio information according to AC-3 has dialnorm metadata, and that the dialnorm metadata is employed to determine the desired loudness of the dialog. *Vinton et al.* omits only the element of decompressing the audio, although it is well known that audio transmitted by AC-3 and MPEG is generally compressed, and must be decompressed after it is demultiplexed. However, *Hemkumar et al.* teaches an audio information decoder 100 that receives data in any one of a number of forms, including compressed data conforming to the AC-3 digital audio compression standard, where a decoder is used to decompress AC-3 bitstreams. Compression is performed to achieve high coding gain. (Column 3, Lines 1 to 32: Figure 1A) It would have been obvious to one having ordinary skill in the art to decompress the audio of *Vinton et al.* before controlling loudness as taught by *Hemkumar et al.* for a purpose of achieving high coding gain.

Concerning claims 15 and 47, similar considerations apply.

Concerning claims 16, 28, and 48, *Hemkumar et al.* discloses that decompressed audio data from AC-3 produces PCM samples. (Column 4, Lines 1 to 12)

Concerning claim 26, *Vinton et al.* discloses dividing three programs of Newscast 1, Newscast 2, and Commercial into time intervals representing Voice 1, Voice 2, Other Sounds, Voice, and Music, and finds a loudness of each time interval as -24 dB, -27 dB, -33 dB, etc. (¶[0034]: Table I); implicitly, there are time intervals with intermediate loudness; thus, normal speech of Scene 1 has an loudness of -27 dB, which is intermediate between a ship whistle of -12 dB and waves of -40 dB (Table III).

8. Claims 4, 5, 12, 17, 18, 19, 39, 40, 44, 49, 50, 51, 55, 56, 63, 64, 67, and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Vinton et al.* in view of *Schneider et al.*

Concerning claims 4, 5, 39, 40, 55, 56, 63, and 64, *Vinton et al.* suggests that the encoder may apply any type of encoding including perceptual coding. (¶[0049]: Figure 3) It is known to those skilled in the art that perceptual coding involves psycho-acoustic criteria. *Vinton et al.* omits determining a loudness based on Leg (A), but Applicant's Specification, Page 6, Lines 17 to 20, admits that Leg (A) has been used to quantify and control loudness of dialog, so the disclosure amounts to Admitted Prior of the obviousness of Leg (A) for perceptual encoding involving psycho-acoustic criteria. Specifically, *Schneider et al.* teaches utilizing a psychoacoustic model that calculates the minimum amplification that must be applied to make a signal-of-interest audible over an undesired signal to result in better fidelity and signal quality. (Column 2, Lines 33 to

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48; Column 5, Lines 57 to 61) It would have been obvious to one having ordinary skill in the art to apply psychoacoustic criteria and Leg (A) as taught by *Schneider et al.* and Applicant's Admitted Prior Art to a method and system to control loudness of *Vinton et al.* for a purpose of ensuring that a signal-of-interest is audible over an undesired signal to result in better fidelity and signal quality.

Concerning claims 12, 44, 67, and 71, *Vinton et al.* omits determining a compression value for the audio and correcting the compression value. However, *Schneider et al.* teaches dynamic range compression techniques to ensure that the output audio is made audible and intelligible over environmental noise. (Column 4, Lines 42 to 44; Column 5, Lines 57 to 61; Column 8, Line 63 to Column 9, Line 1)

Concerning claim 17 and 49, *Vinton et al.* omits applying an automatic gain control prior to identifying dialog. However, automatic gain control is a well known technique for adjusting loudness of an audio signal. Specifically, *Schneider et al.* teaches simple automatic gain control as one method of permitting listeners to hear a signal-of-interest on a cellular phone in an environment of an automobile. (Column 1, Lines 14 to 40)

Concerning claim 18, 19, 50, and 51, *Vinton et al.* omits filtering the audio. However, filtering of audio is well known for the purpose of separating it into frequency bands or limiting an audio signal to frequency bands characteristic of speech. Specifically, *Schneider et al.* teaches a filterbank to separate a signal-of-interest into a number of bands for audio processing to provide the best possible fidelity. (Column 2, Lines 62 to 67)

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Vinton et al.* in view of *Schneider et al.* as applied to claim 19 above, and further in view of *Lennig et al.*

Schneider et al. omits filtering the audio in a range of about 100 Hertz to about 1,000 Hertz. However, 100 Hertz to 1,000 Hertz is a known frequency range for speech. Specifically, *Lennig et al.* teaches filtering into channels of 100 Hz to 1000 Hz for a speech recognizer. (Column 3, Lines 4 to 12) An objective is to obtain increased accuracy in speech recognition. (Abstract) It would have been obvious to one having ordinary skill in the art to filter audio in a range of about 100 Hz to 1000 Hz as taught by *Lennig et al.* in a method and system for controlling loudness of *Vinton et al.* for a purpose of obtaining increased accuracy in recognizing speech.

10. Claims 29 to 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Vinton et al.* in view of *Hemkumar et al.* as applied to claims 25 and 28 above, and further in view of *Schneider et al.*

Similar considerations apply as to claims 17, 19, and 44.

Allowable Subject Matter

11. Claims 6, 7, 27, 41, and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Gagnon and Hoffert et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

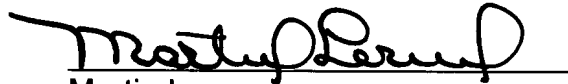
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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ML

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A handwritten signature in black ink, appearing to read "Martin Lerner", written over a horizontal line.

Martin Lerner
Examiner
Group Art Unit 2626